

What is claimed is:

- 1 1. A process for producing a sealant comprising the step of:
2 contacting in a reactor under reaction conditions
3 a polymer comprising at least one vinyl, acrylate, or methacrylate monomer
4 and at least one silane comonomer,
5 at least one polymer capping agent,
6 a catalyst, and
7 a reactive diluent.
8 2. The process of claim 1, wherein the reactive diluent comprises an alkylene
9 carbonate.
1 3. The process of claim 1, wherein the reactive diluent is propylene carbonate.
1 4. The process of claim 1, wherein the silane comonomer of the polymer is
2 selected from the group consisting of methyl trimethoxysilane, methyl triethoxysilane, octyl
3 triethoxysilane, methyl trioximinosilane, vinyl trimethoxysilane, vinyltriethoxysilane,
4 vinyltris (2-methoxyethoxy) silane, 3-[tris (trimethylsiloxy) silyl] propyl methacrylate, vinyl
5 methyldimethoxy silane, vinyl methyldiethoxy silane, vinylphenyldimethoxysilane vinyl
6 oximino silane, and mixtures thereof.
1 5. The process of claim 1, wherein the silane comonomer is a mixture of methyl
2 trimethoxysilane and vinyl trimethoxysilane.
1 6. The process of claim 1, wherein the vinyl, acrylate, or methacrylate monomer
2 is substantially linear.

1 7. The process of claim 1, wherein the acrylate monomer is selected from the
2 group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethyl hexyl acrylate, and
3 mixtures thereof.

1 8. The process of claim 1, wherein the methylacrylate monomer is selected from
2 the group consisting of lauryl methacrylate, methyl methacrylate, ethyl methacrylate, butyl
3 methacrylate octyl methacrylate and stearyl methacrylate, and mixtures thereof.

1 9. The process of claim 1, wherein the vinyl monomer is selected from the group
2 consisting of vinyl acetate, acrylonitrile, methacrylonitrile, styrene, dioctyl fumarate, dioctyl
3 maleate and maleic anhydride.

1 10. The process of claim 1, wherein the monomer comprises butylacrylate,
2 methylacrylate, and lauryl methacrylate.

1 11. The process of claim 1, wherein the polymer capping agent is an alkoxy
2 silane.

1 12. The process of claim 1, wherein the polymer capping agent is selected from
2 the group consisting of mercapto - containing alkoxy silanes,
3 g-glycidoxypentyltrimethoxysilane and mixtures thereof.

1 13. The process of claim 1, wherein the sealant contains in the range from about
2 90 to about 99 weight percent solid yield.

1 14. The process of claim 1, wherein the sealant contains in the range of from
2 about 95 to about 99 weight percent solid yield.

1 15. The process of claim 1, wherein the sealant contains in the range of at least 98
2 weight percent solid yield.

1 16. The process of claim 1, wherein the sealant contains a glass peel cohesive
2 failure (CF) value in the range of from about 16 to 36 pounds-force per inch of width, and an
3 aluminum peel adhesive failure (AF) value in the range of from about 8.75 to about 28.75
4 pounds-force per inch of width.

1 17. The process of claim 1, wherein the polymer has a molecular weight in the
2 range of from about 50,000 g/mol to about 150,000 g/mol.

1 18. The process of claim 1, wherein the sealant has a viscosity in the range of
2 from about 1000 to about 50,000 Centipose and determined using a 70% solution in toluene
3 at room temperature.

4 19. The process of claim 1, wherein the catalyst is a mixture of t-butyl peroctoate,
5 toluene, and dioctyl tin dilaurate.

1 20. A sealant composition comprising:
2 a polymer comprising at least one vinyl, acrylate or methacrylate monomer and at
3 least one silane comonomer,
4 at least one polymer capping agent,
5 a catalyst, and
6 a reactive diluent.

1 21. The sealant of claim 20, further comprising an additive.

1 22. The sealant of claim 21, wherein the additive comprises fumed silica,
2 g-glycidoxypropyltrimethoxysilane, and a wetting agent.

1 23. The sealant of claim 20, wherein the reactive diluent comprises an alkylene
2 carbonate.

1 24. The sealant of claim 20, wherein the reactive diluent is propylene carbonate.

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1 25. The sealant of claim 20, wherein the silane comonomer of the polymer is
2 selected from the group consisting of methyl trimethoxysilane, methyl triethoxysilane, octyl
3 triethoxysilane, methyl trioximinosilane, vinyl trimethoxysilane, vinyltriethoxysilane,
4 vinyltris (2-methoxyethoxy) silane, 3-[tris (trimethylsiloxy) silyl] propyl methacrylate, vinyl
5 methyldimethoxy silane, vinyl methyldiethoxy silane, vinylphenyldimethoxysilane vinyl
6 oximino silane, and mixtures thereof.

1 26. The sealant of claim 20, wherein the silane comonomer is a mixture of
2 methyltrimethoxysilane and vinyl trimethoxysilane.

1 27. The sealant of claim 20, wherein the vinyl, acrylate, or methacrylate monomer
2 is substantially linear.

1 28. The sealant of claim 20, wherein the acrylate monomer is selected from the
2 group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethyl hexyl acrylate, and
3 mixtures thereof.

1 29. The sealant of claim 20, wherein the methylacrylate monomer is selected from
2 the group consisting of, lauryl methacrylate, methyl methacrylate, ethyl methacrylate, butyl
3 methacrylate octyl methacrylate and stearyl methacrylate, and mixtures thereof.

1 30. The sealant of claim 20, wherein the vinyl monomer is selected from the
2 group consisting of vinyl acetate, acrylonitrile, methacrylonitrile, styrene, dioctyl fumarate,
3 dioctyl maleate and maleic anhydride.

1 31. The sealant of claim 20, wherein the monomer comprises butylacrylate,
2 methylacrylate, and lauryl methacrylate.

1 32. The sealant of claim 20, wherein the polymer capping agent is an alkoxy
2 silane.

1 33. The sealant of claim 20, wherein the polymer capping agent is selected from
2 the group consisting of mercapto – containing alkoxy silanes, g-glycidoxypropyltrimethoxy
3 silane, and mixtures thereof.

1 34. The sealant of claim 20, wherein the sealant contains in the range of from
2 about 90 to about 99 weight percent solid yield.

1 35. The sealant of claim 20, wherein the sealant contains in the range of from
2 about 95 to about 99 weight percent solid yield.

1 36. The sealant of claim 20, wherein the sealant contains in the range of at least
2 98 weight percent solid yield.

1 37. The sealant of claim 20, wherein the sealant has a glass peel cohesive failure
2 (CF) value in the range of from about 16 to 36 pounds-force per inch of width, and an
3 aluminum peel adhesive failure (AF) value in the range of from about 8.75 to about 28.75
4 pounds-force per inch of width.

1 38. The sealant of claim 20, wherein the polymer contains a molecular weight in
2 the range of from about 50,000 g/mol to about 150,000 g/mol.

1 39. The sealant of claim 20, wherein the sealant contains a viscosity in the range
2 of from about 1000 to about 50,000 Centipose and determined using a 70% solution in
3 toluene at room temperature.

1 40. The sealant of claim 20, wherein the catalyst is a free radical genemtor
2 selected from the group consisting of azo, peroxide, and hydroperoxide catalysts, and
3 mixtures thereof.

1 41. The sealant of claim 20, wherein the catalyst is a mixture of t-butyl
2 peroctoate, toluene, and dioctyl tin dilaurate.